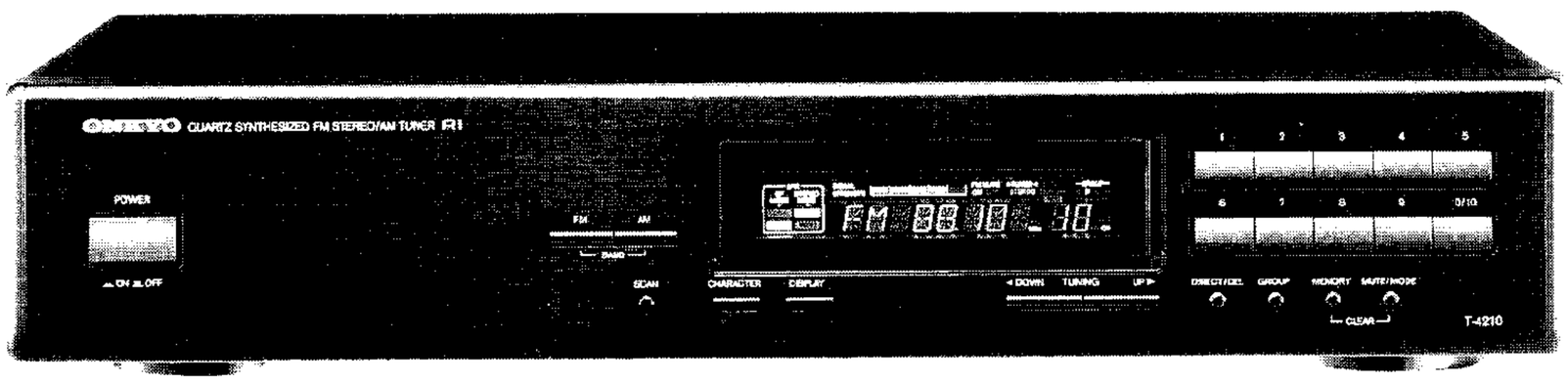
Ref. No. 3503

ONKYO SERVICE MANUAL

SYNTHESIZED FM STEREO/AM TUNER MODEL T-4210



Black model

BMDN, BMD	120V AC, 60 Hz
BMPT	230V AC, 50Hz
BMW	120/220 V AC, 50/60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

FM

Tuning range:	87.50 – 108.00 MHz (50 kHz steps)
Usable sensitivity	
Mono:	11.2 dBf, 1.0 μV, 75 Ohms, IHF 0.9 μV, 75 Ohms, DIN
Stereo:	17.2 dBf, 2.0 μV, 75 Ohms, IHF 20 μV, 75 Ohms, DIN
U.S.A. & Canadian models	
Mono:	11.2 dBf, 2.0 μV, 300 Ohms, IHF
Stereo:	17.2 dBf, 4.0 μV, 300 Ohms, IHF
50 dB quieting sensitivity	
Mono:	16.1 dBf, 1.7 μV, 75 Ohms
Stereo:	36.1 dBf, 17 μV, 75 Ohms
U.S.A. & Canadian models	
Mono:	16.1 dBf, 3.5 μV, 300 Ohms, IHF
Stereo:	36.1 dBf, 35 μV, 300 Ohms, IHF
Capture ratio:	1.5 dB
Image rejection ratio:	80 dB
U.S.A. & Canadian models:	40 dB
IF rejection ratio:	90 dB
Signal-to-noise ratio	
Mono:	73 dB, IHF
Stereo:	66 dB, IHF
Alternate channel attenuation:	50 dB, IHF
Selectivity:	55 dB, DIN (±300 kHz, 40 kHz dev)
U.S.A. & Canadian models:	50 dB, IHF (±400 kHz)
AM suppression ratio:	50 dB
Total Harmonic Distortion	
Mono:	0.1%
Stereo:	0.2%
Frequency response:	30 – 15,000 Hz (±1.5 dB)
Stereo separation:	40 dB at 1 kHz 30 dB at 70 – 10,000 Hz
Output voltage:	0.75 V
U.S.A. & Canadian models:	0.45 V
Muting level:	17.2 dBf, 2.0 μV, 75 Ohms

AM

Tuning range	
European models:	522 –1611 kHz (9 kHz steps)
U.S.A. & Canadian models:	530 –1710 kHz (10 kHz steps)
Worldwide models:	531–1602 kHz (9 kHz steps) 530–1710 kHz (10 kHz steps)
Usable sensitivity:	25 μV
Image rejection ratio:	40 dB
IF rejection ratio:	40 dB
Signal-to-noise ratio:	40 dB
Total Harmonic Distortion:	0.8%
Output voltage:	150 mV

General

Power supply	
European & Australian models:	AC 230 V, 50 Hz
U.S.A. & Canadian models:	AC 120 V, 60 Hz
Worldwide models:	AC 120 V and 220 V switchable, 50 Hz/60 Hz
Dimensions (W × H × D):	455 × 90 × 307 mm 17-15/16″ × 3-9/16″ × 12-1/16″
Weight:	3.7 kg, 8.2 lbs.

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1. Safety-check out

(Only U.S.A. model)

After correcting the original service problem,perform the following safety check before releasing the set to the customer.

Connect the insulating-resistance tester between the plug of power suuply cord and chassis.

Specifications: 3.3Mohm ±10% at 500V.

2. Memroy preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory,the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit.

On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

3. Voltage Selector (Back Panel)

W models are equipped with a voltage selector to conform with local power supplies. Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on. This switch is set to 220V at the factory. Voltage is changed by sliding the groove in the switch with a screwdriver to the right or left. Confirm that the switch has been moved all the way to the right or left before turning the power switch on. Models without a voltage selector can only be used in areas where the power supply is the same as that of the unit.

4. Tuning Step Frequency Switch (Bottom board)

W models are equipped with a switch for the AM (9kHz/10kHz) band. The switch should be set to the proper steps for the radio broadcast frequencies in your area.

5. Changing the band step

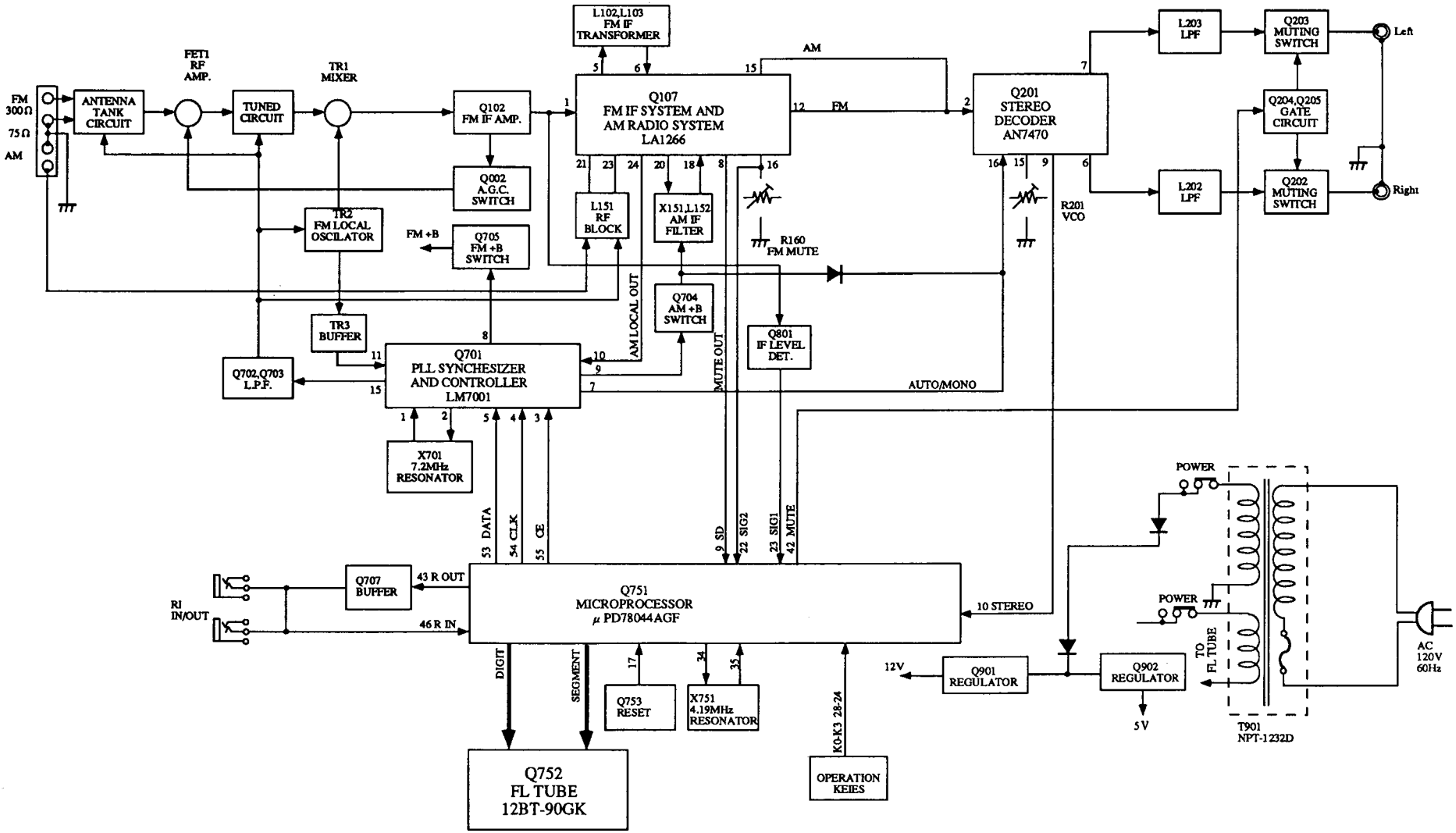
With the exception of the models below, a BAND STEP selector switch is not provided.

AM

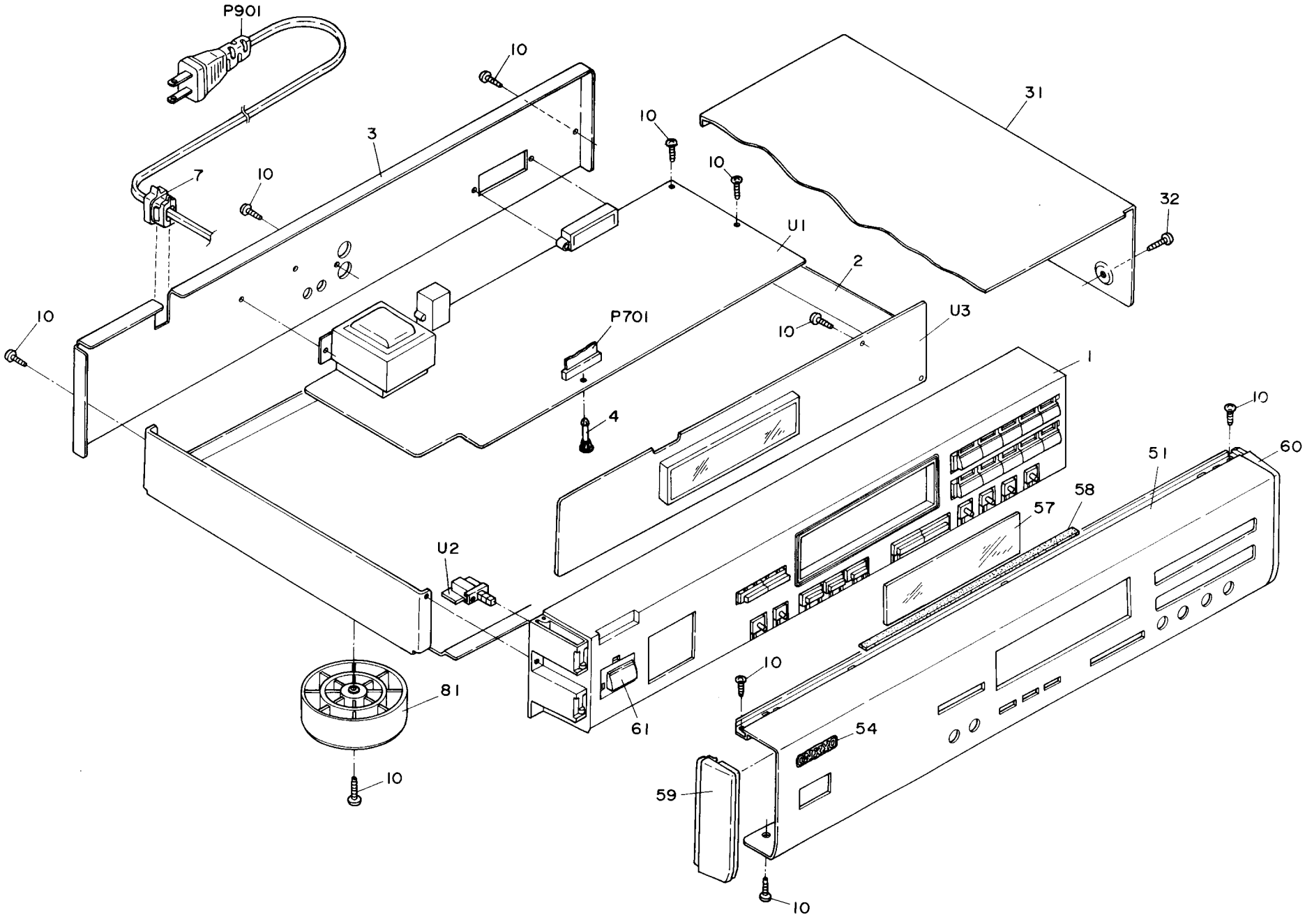
MODEL	BAND STEP	J767
120V	10kHz→9kHz	Short
Others	9kHz→10kHz	Open

BLOCK DIAGRAM

120V model



EXPLODED VIEW



PARTS LIST

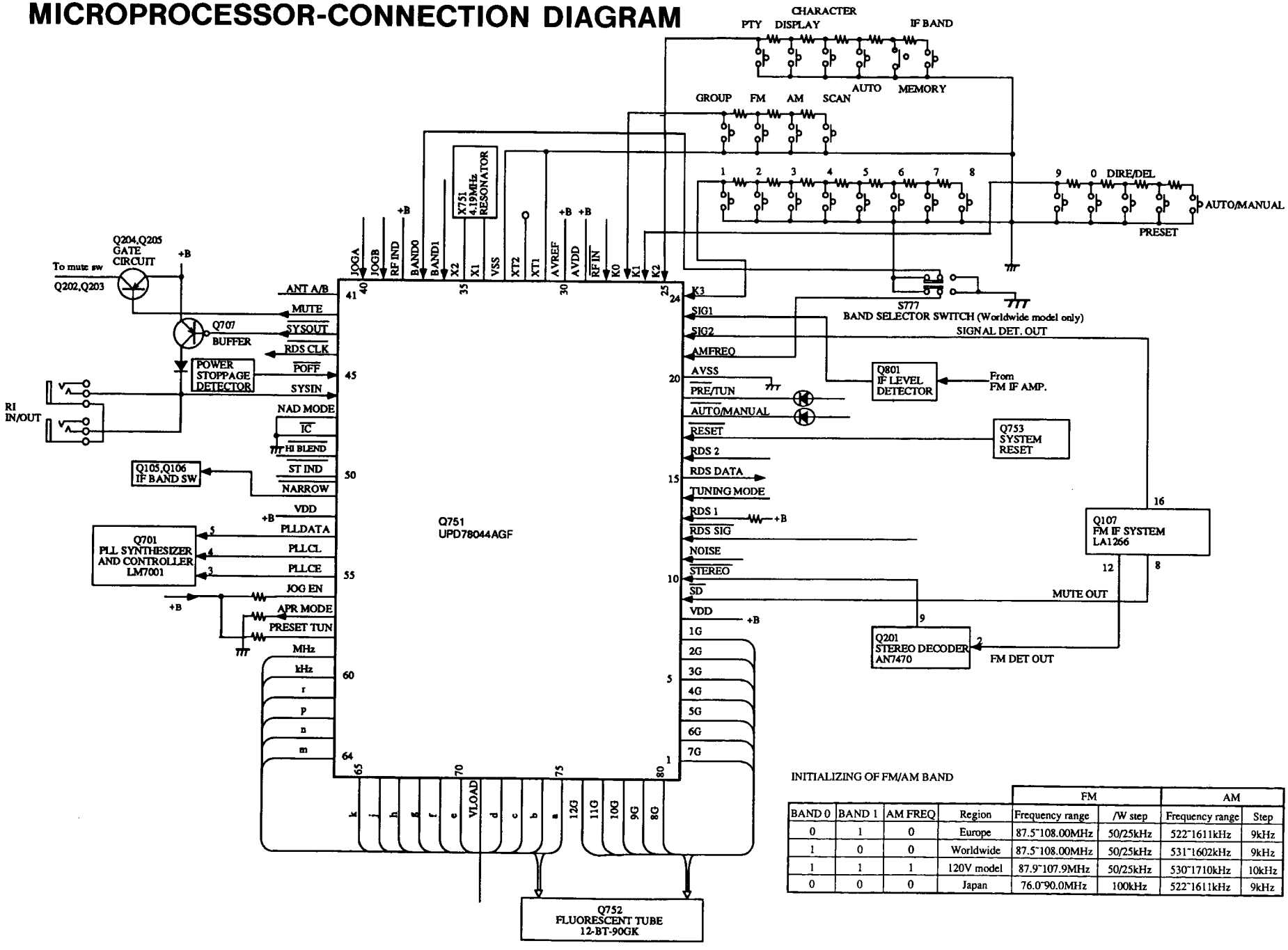
REF.NO.	PART NO.	DESCRIPTION
1	27110840Y	Front bracket
2	27100230BY	Chassis
3	27122010AY	Rear panel <D>
	27122012AY	Rear panel <WT>
	27122048AY	Rear panel <T/A>
	27122100Y	Rear panel <K>
4	27190511	KGLS-16RF, Holder
⚠ 7	27300750	#2271, Bushing, cord
10	838130088	3TTB+8B, Self-tapping screw
31	28184488	Top cover
32	838430088	3TTB+8B(BC), Self-tapping screw
51	1A572121Y	Front panel ass'y
54	28135199	Badge
	8910301	CS-3(SUS), CS ring for badge
57	28191700Y	Clear plate
58	28140837	t0.9×240×10, Cushion
59	28125257-6Y	End cap (L)
60	28125258-6Y	End cap (R)
61	28324140Y	Knob, power
81	27175292	Leg

REF.NO.	PART NO.	DESCRIPTION
P701	2041253512Y	NCFC1-253512, Flat cable
⚠ P901	253191HITY	AS-UC-7#18 SPT-1, Power supply cord <D>
⚠	253195MARY	AS-CEE, Power supply cord <WT/T>
⚠	253197HIT	AS-SAA, Power supply cord <A>
⚠	253213WSE	AS-KS, Power supply cord <K>
U1	1A572577-1Y	NARF-5177-1, Main circuit pc board ass'y <D>
	1A572577-1AY	NARF-5177-1A, Main circuit pc board ass'y <WT>
	1A572577-1CY	NARF-5177-1C, Main circuit pc board ass'y <T/A/K>
U2	1A572578-1Y	NASW-5178-1, Power switch pc board ass'y
U3	1A572579-1Y	NADIS-5179-1, Display circuit pc board ass'y <D>
	1A572579-1AY	NADIS-5179-1A, Display circuit pc board ass'y <WT>
	1A572579-1BY	NADIS-5179-1B, Display circuit pc board ass'y <T/A/K>

NOTE: <D>:120V model only
<WT>:Asian model only
<T>:Taiwanese model only
<A>:Australian model only
<K>:Korean model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

MICROPROCESSOR-CONNECTION DIAGRAM



INITIALIZING OF FM/AM BAND

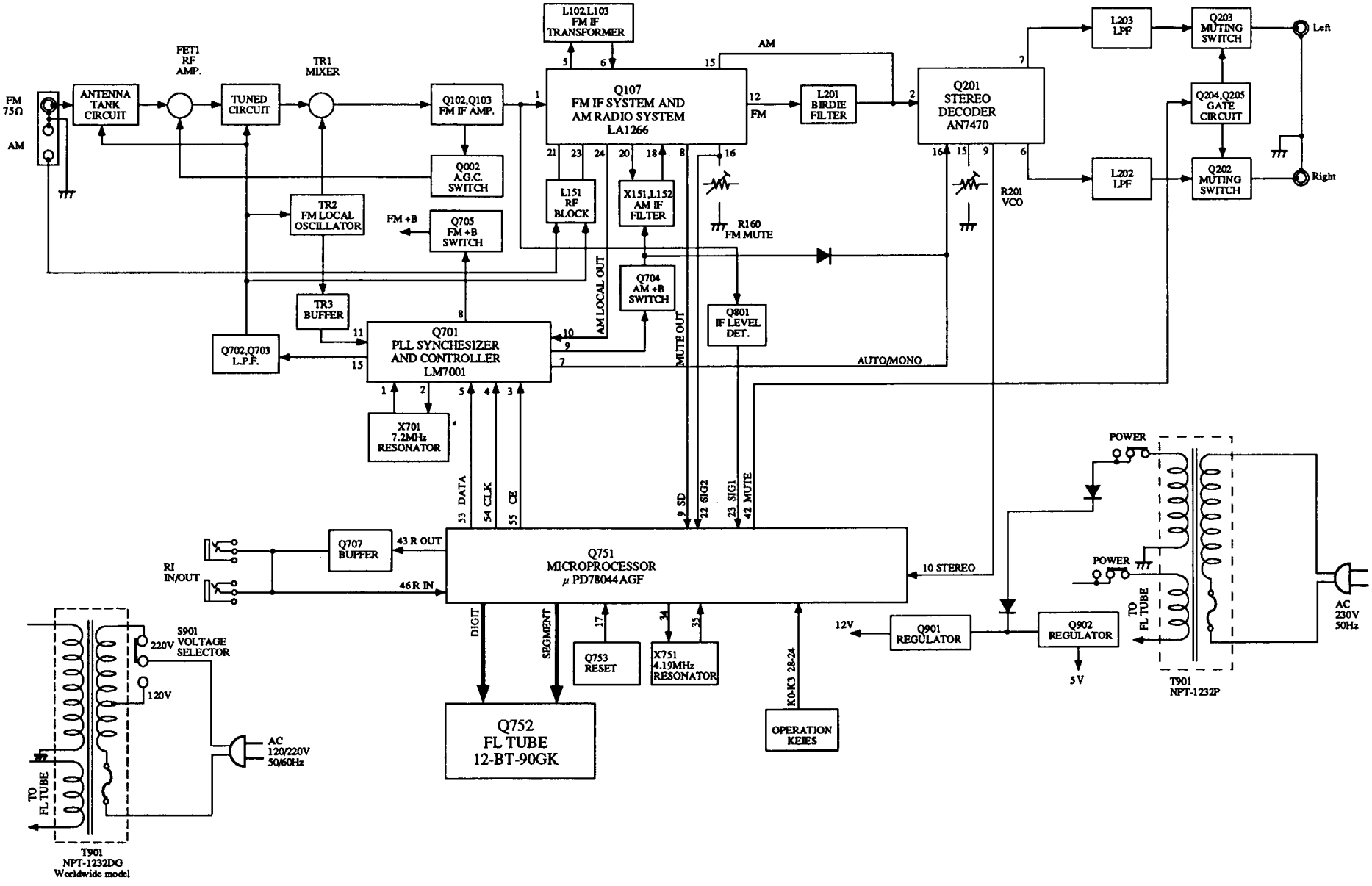
				FM		AM	
BAND 0	BAND 1	AM FREQ	Region	Frequency range	/W step	Frequency range	Step
0	1	0	Europe	87.5~108.00MHz	50/25kHz	522~1611kHz	9kHz
1	0	0	Worldwide	87.5~108.00MHz	50/25kHz	531~1602kHz	9kHz
1	1	1	120V model	87.9~107.9MHz	50/25kHz	530~1710kHz	10kHz
0	0	0	Japan	76.0~90.0MHz	100kHz	522~1611kHz	9kHz

TERMINAL DESCRIPTION

Pin No.	Function	I/O	Description
1~7	7G-1G	O	Grid output terminals for fluorescent bube.
8	VDD	-	Power supply terminal.
9	$\overline{SD}$	I	Broadcast detection input more than the muting level.
10	$\overline{STEREO}$	I	Stereo broadcast detection input
11	NOISE	I	Noise detection input
12	$\overline{RDSSIG}$	I	RDS broadcast detection input
13	RDS1	I	Initializing input for RDS operation
14	TUNING MODE	I	Initializing input for tuning mode
15	RDSDATA	I	Connect to the terminal DATA of RDS data decoder IC μ PC1346CS
16	RDS2	I	Initializing input for RDS operation
17	$\overline{RESET}$	I	System reset terminal
18	$\overline{AUTO/MANU}$	O	Tuning indicator output
19	$\overline{PRE/TUN}$	O	PRESET indicator output
20	AVSS		Ground terminal of A/D converter
21	AMFREQ	I	Initializing input for AM band step.
22	SIG2	I	Signal strength level input
23	SIG1	I	Signal strength level input
24~27	K3~K0	I	Operation key connection terminals
28	$\overline{RFIN}$	I	RF mode detect terminal
29	AVDD		Analog power supply terminal of A/D converter
30	AVREF	I	Reference voltage input of A/D converter
31	XT1	I	Resonator terminals for sub system
32	XT2		Resonator terminals for sub system . Not used.
33	VSS		Ground terminal
34	X1	I	Resonator terminals for main system
35	X2		Connect the 4.19MHz ceramic resonator.
36	BAND1	I	Initializing input for FM band step.

Pin No.	Function	I/O	Description
37	BAND0	I	
38	$\overline{RFIND}$	I	RF mode LED output. Not used.
39	JOGB	I	Jog dial signal B
40	JOGA	I	Jog dial signal A
41	ANT A/B	O	Ant A/B selector output. Not used.
42	MUTE	O	Muting control output
43	$\overline{SYSOUT}$	O	System code output
44	RDSCLK	I	Connect to the terminal $\overline{CLK}$ of RDS data decoder.
45	$\overline{POFF}$	I	Power stoppage detection input
46	SYSIN	I	System code input
47	NAD MODE	I	Initializing input for memory system
48	$\overline{IC}$		Connect to the ground terminal
49	$\overline{HI\ BLEND}$	O	Hi-blend control output. Not used.
50	$\overline{ST\ INDD}$	O	Stereo LED indicator output
51	$\overline{NARROW}$	O	NARROW indicator output
52	VDD		Power supply terminal
53	PLLDATA	O	Connect to the terminal DATA of PLL IC LM7001.
54	PLLCL	O	Connect to the terminal CL of PLL IC.
55	PLLCE	O	Connect to the terminal CE of PLL IC.
56	JOG EN	I	Initializing input for Jog operation.
57	APR MODE	I	Initializing input for APR mode.
58	PRESET TUN	I	Initializing input for PRESET tuning.
59~70	P16~P5	O	Segment output terminals for fluorescent tube.
71	VLOAD		Pull-down resistor connection terminal of FL controller and driver.
72~75	P4~P1	O	Segment output terminals for fluorescent tube.
76~80	12G~8G	O	Grid output terminals for fluorecent tube

BLOCK DIAGRAM
other models



ADJUSTMENT PROCEDURES

Preparation

• Input

FM mono: 1kHz, 75kHz devi., 60dB/μV (65dBf)
FM stereo: 1kHz, L+R 67.5kHz devi.: Pilot signal 19kHz
7.5kHz devi.
AM: 400Hz, 30% mod.,

1.FM ADJUSTMENT

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM IF/RF	1	Fig.1	99.1MHz, (99.0MHz) 1kHz 75kHz devi. 65dBf(60dB μ)	—	99.1MHz (99.0MHz)	DC voltmeter	L102	0±20mV	FM MUTE/MODE switch:OFF/MONO Repeat the steps 1 and 3 until no further adjustment is necessary.
	2					AC voltmeter	IFT on the front end	Maximum	
	3					Distortion analyzer	L103	Minimum	
Muting Level	1	Fig.1	99.1MHz 1kHz (99.0MHz) 22.5kHz devi. 19.2dBf(14dB)	—	99.1MHz (99.0MHz)	Oscilloscope	R160	Signal output	FM MUTE/MODE switch:ON/STEREO
	2							No signal	
VCO	1	Fig.2	99.1MHz (99.0MHz),1kHz 75kHz,devi, 65dBf(60dB μ)		99.1MHz (99.0MHz)	Frequency counter	R201	19,000±10Hz	FM MUTE/MODE switch:ON/STEREO
Stereo Distortion		Fig.3	99.1MHz (99.0MHz) Ext. mod.65dBf(60dB)	Channel L or R 1kHz	99.1MHz (99.0MHz)	Distortion analyzer	IFT on the front end	Minimum	FM MUTE/MODE switch:ON/STEREO Don't turn more than ±90°
Stereo Separation (Except "D"type)	1	Fig. 3	99.1MHz (99.0MHz) Ext. mod.65dBf(60dB)	Channel L 1kHz	99.1MHz (99.0MHz)	Channel R AC voltmeter	R202	Minimum	Maximum and same separation
	2			Channel R 1kHz		Channel L AC voltmeter		Minimum	

NOTE: ( ):230V/Worldwide models

2.AM ADJUSTMENT

120V model

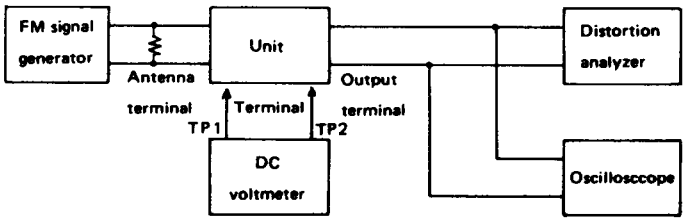
Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		530kHz	Digital DC voltmeter	OSC coil on RF block L151	1.3±0.2V
2	600kHz 400Hz 30% mod. 60dB/m	600kHz	AC voltmeter	RF coil on RF block L151	Maximum
3	990kHz 400Hz 30% mod. 60dB/m	990kHz	AC voltmeter	L152	Maximum

Reference Specification
FM tuned voltage:87.5MHz~108.0MHz
1.6±0.5V ~8.0±0.5V
AM tuned voltage:530kHz~1710kHz
1.3±0.5V~7.4±0.5V

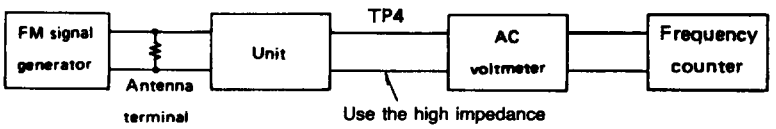
230V and Wolrdwide models

Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		522kHz or 531kHz	Digital DC voltmeter	OSC coil on RF block L151	1.2±0.2V
2	603kHz 400Hz 30% mod. 60dB/m	603kHz	AC voltmeter	RF coil on RF block L151	Maximum
3	999kHz 400Hz 30% mod. 60dB/m	999kHz	AC voltmeter	L152	Maximum

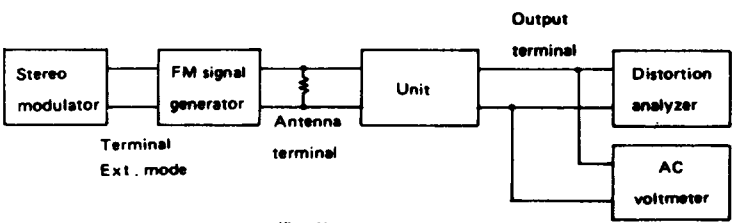
Reference Specification
FM tuned voltage:87.5MHz~108.0MHz
1.6±0.5V ~8.0±0.5V
AM tuned voltage:522kHz~1611kHz
1.2±0.5V~6.7±0.5V
(230V model)
AM tuned voltage:531kHz~1602kHz
1.2±0.5V~6.7±0.5V
(Worldwide model)



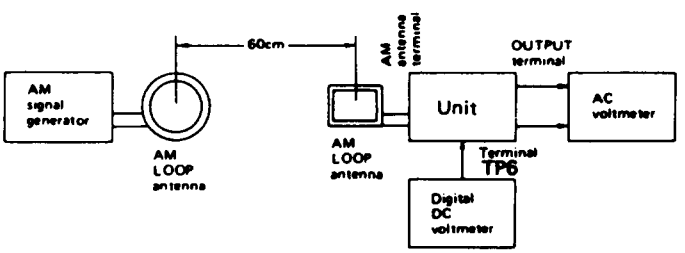
(fig. 1)



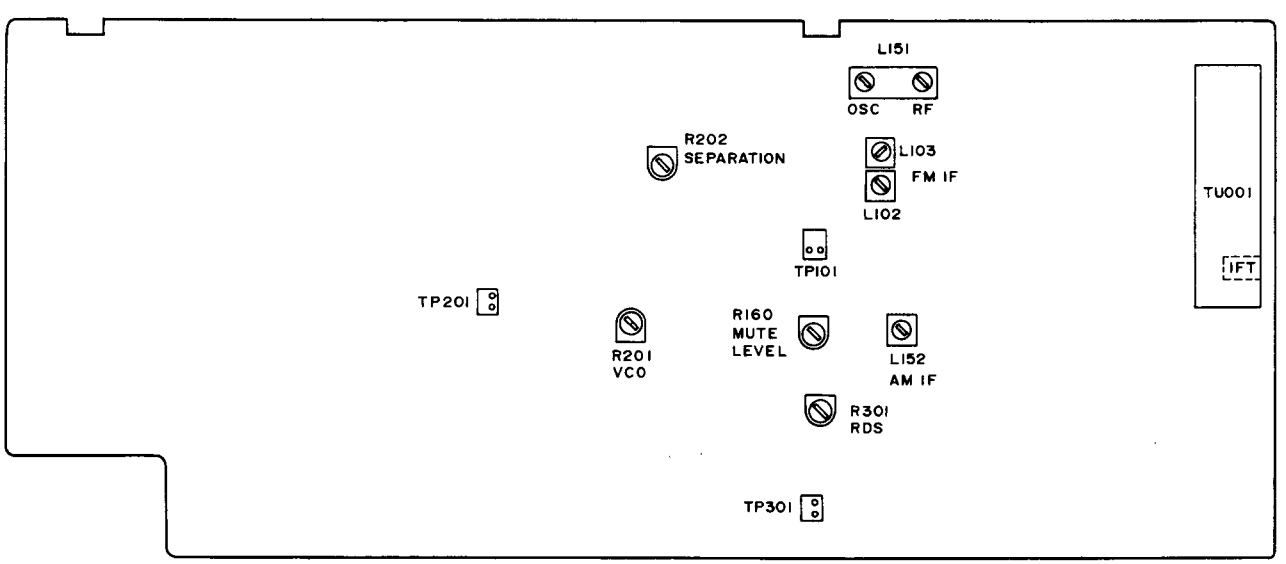
(fig. 2)



(fig. 3)

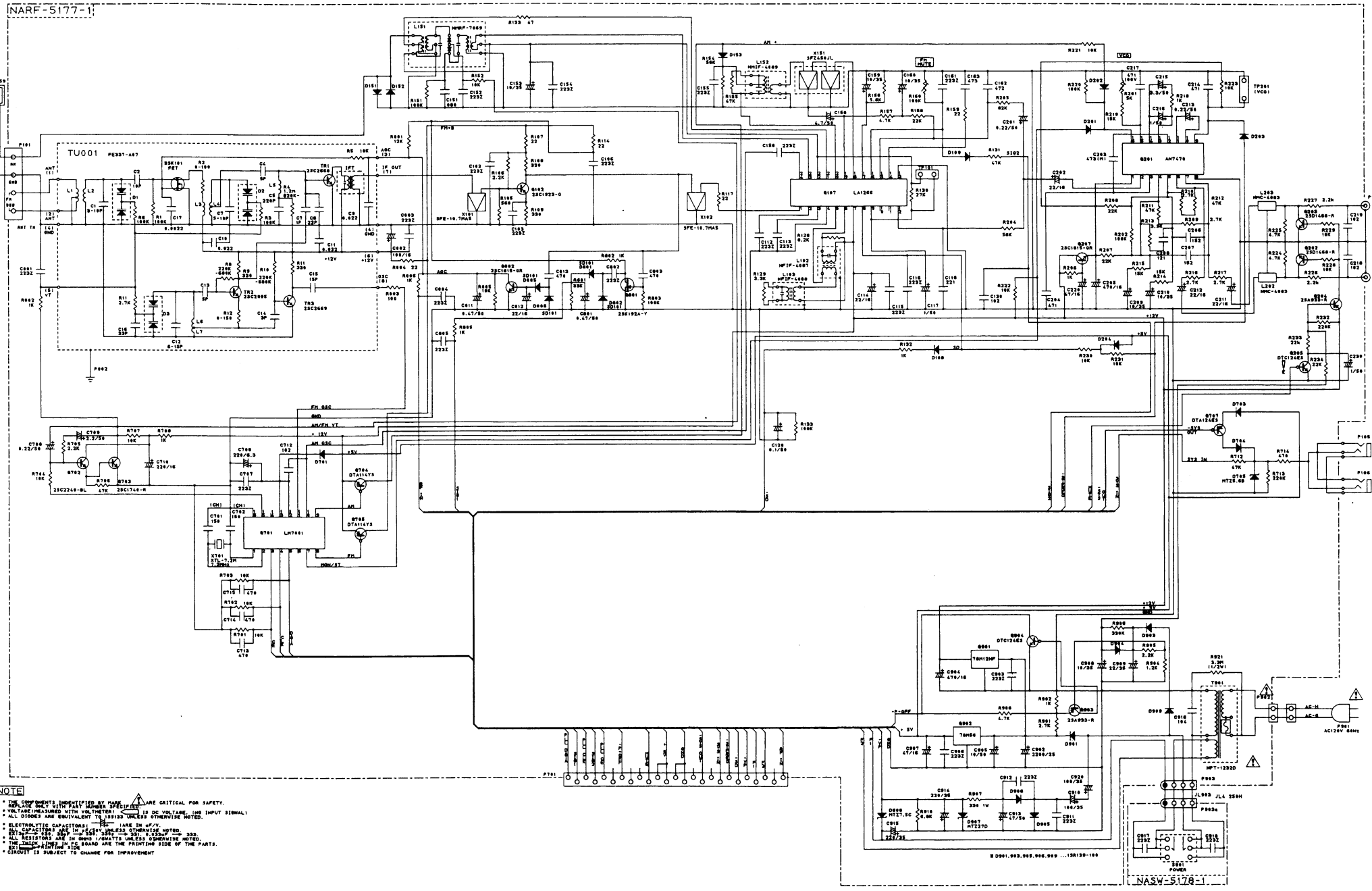


(AM)



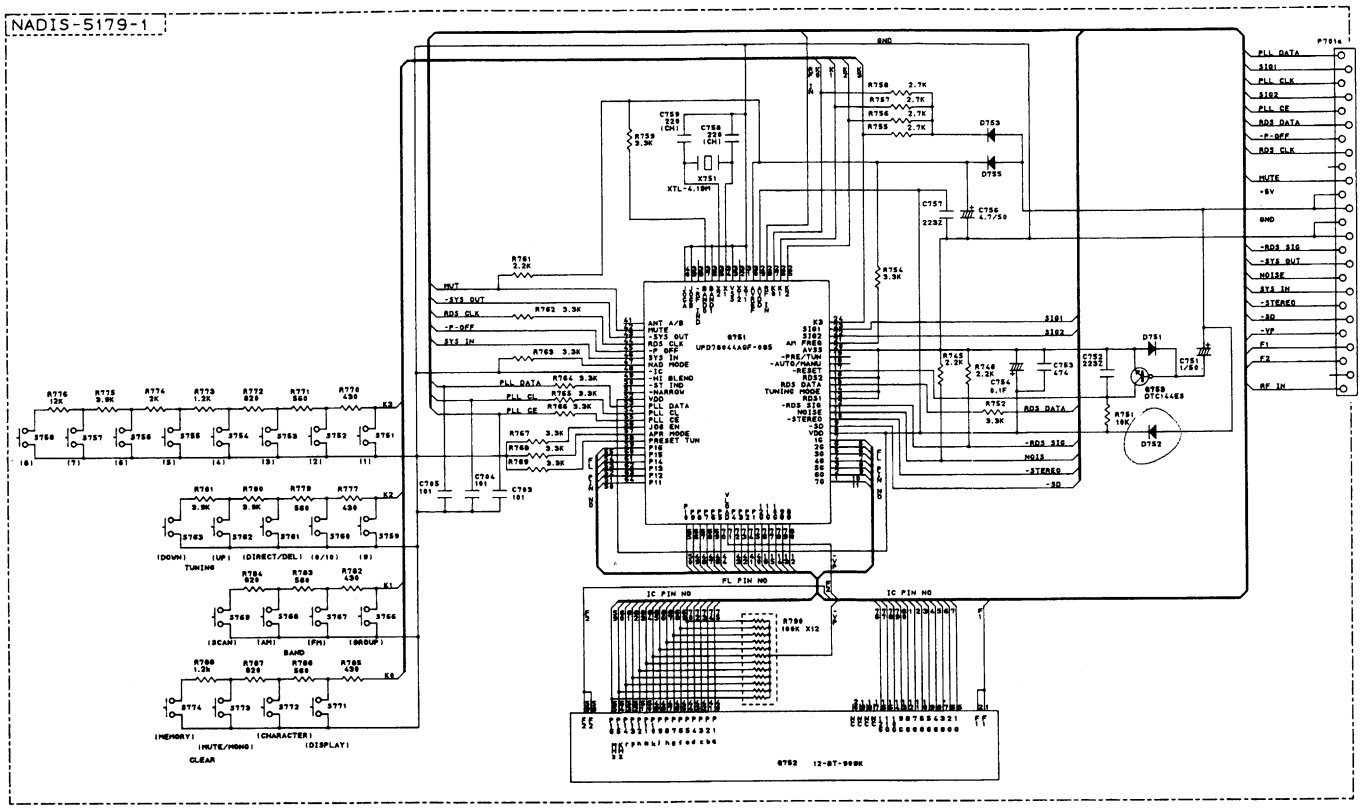
SCHEMATIC DIAGRAM

—120V model—



SCHEMATIC DIAGRAM

NADIS-5179-1



	E	C	B
FM Q002	0.00	4.68	0.00
AM	0.00	0.00	0.00
FM Q102	1.34	9.12	2.09
AM	0.00	0.00	0.00
FM Q103	1.42	8.88	2.07
AM	0.00	0.00	0.00
FM Q202	0.00	0.00	0.68
AM	0.00	0.00	0.00
FM Q203	0.00	0.00	0.67
AM	0.00	0.00	0.00
FM Q204	11.92	11.90	11.22
AM	11.92	0.00	14.90

	E	C	B
Q205	0.00	0.00	4.93
	0.00	14.87	0.00
Q207	11.15	11.92	11.87
	11.15	11.92	11.87
Q702	0.60	11.15	1.09
	0.60	11.35	1.09
Q703	0.00	3.80	0.60
	0.00	5.80	0.60
Q704	11.90	0.00	11.84
	11.90	11.90	0.00
Q705	11.90	10.61	0.00
	11.90	0.00	11.85

	E/D	C/S	B/G
Q706	5.68	5.59	4.96
	5.68	1.95	5.68
Q707	5.30	0.00	4.94
	5.31	0.00	4.95
Q802	2.57	11.91	3.18
	2.54	11.92	3.14
Q903	5.25	0.00	6.52
	5.75	0.00	7.03
Q904	0.00	4.48	0.00
	0.00	4.48	0.00
Q801	5.16	0.00	0.00
	0.00	0.00	0.00

	1	2	3	4	5	6	7	8	9	10	11	12
FM Q107	2.53	2.53	2.53	0.00	11.91	11.91	11.91	4.80	4.11	2.46	2.80	3.16
AM	1.05	1.05	1.05	0.00	11.92	11.92	11.92	4.79	3.86	2.50	2.30	3.15
FM Q201	11.16	2.56	6.04	8.98	8.98	3.97	4.00	0.00	9.88	2.57	2.58	2.57
AM	11.16	2.56	6.05	8.99	8.99	3.97	4.00	0.00	11.15	2.58	2.58	2.58
FM Q701	0.71	1.67	0.00	0.00	0.00	0.00	7.96	0.00	11.83	0.00	2.90	4.92
AM	0.71	1.67	0.00	0.00	0.00	0.00	9.20	11.85	0.00	1.81	0.00	4.94
	13	14	15	16	17	18	19	20	21	22	23	24
FM Q107	0.00	1.54	1.56	0.49	0.00	2.53	1.56	0.00	4.00	4.00	4.00	3.20
AM	0.00	1.51	1.65	0.00	0.38	1.06	1.63	11.33	3.69	3.69	3.69	2.41
FM Q201	2.57	2.58	0.40	0.74								
AM	2.58	2.57	0.00	8.65								
FM Q701	4.92	1.05	1.09	0.00								
AM	4.94	1.05	1.08	0.00								

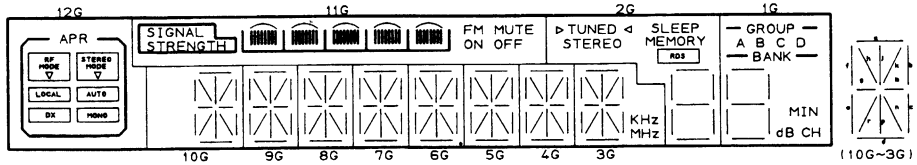
	Q753			Q901		Q902	
E	0.00	0.00	1	20.20	22.00	20.20	22.00
C	4.93	4.93	2	0.00	0.00	0.00	0.00
B	0.00	0.00	3	11.92	11.92	5.68	5.68
	FM	AM		FM	AM	FM	AM

FM	-VP	-28.40
AM		-28.90

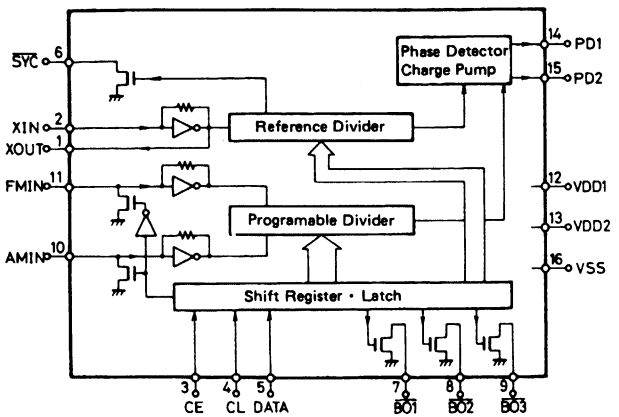
FM	F1,F2	4.7	AC
AM		4.7	AC

NOTE

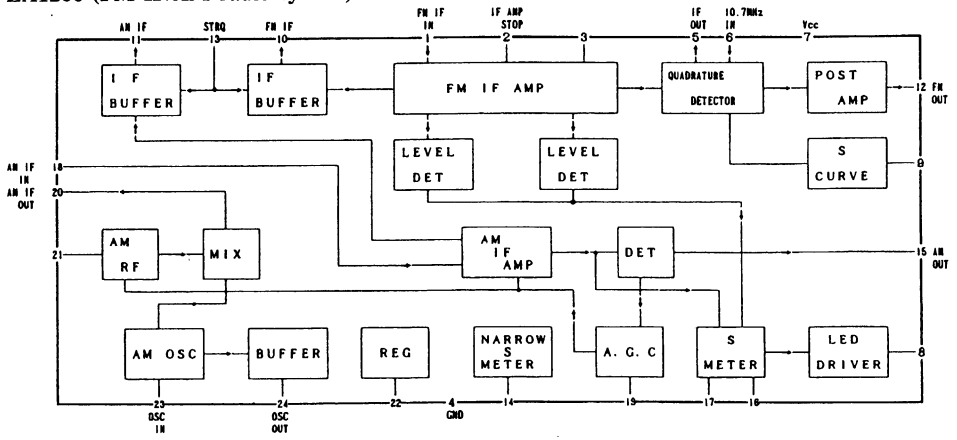
- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE MEASURED WITH VOLTMETER, ... DC VOLTAGE, NO INPUT SIGNAL.
- ALL DIODES ARE EQUIVALENT TO 1S2139 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS: ... IN μF/V.
- ALL CAPACITORS ARE IN pF/50V UNLESS OTHERWISE NOTED.
- ALL RESISTORS ARE IN OHMS 1/8WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS.
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT



LM7001 (PLL frequency synthesizer)

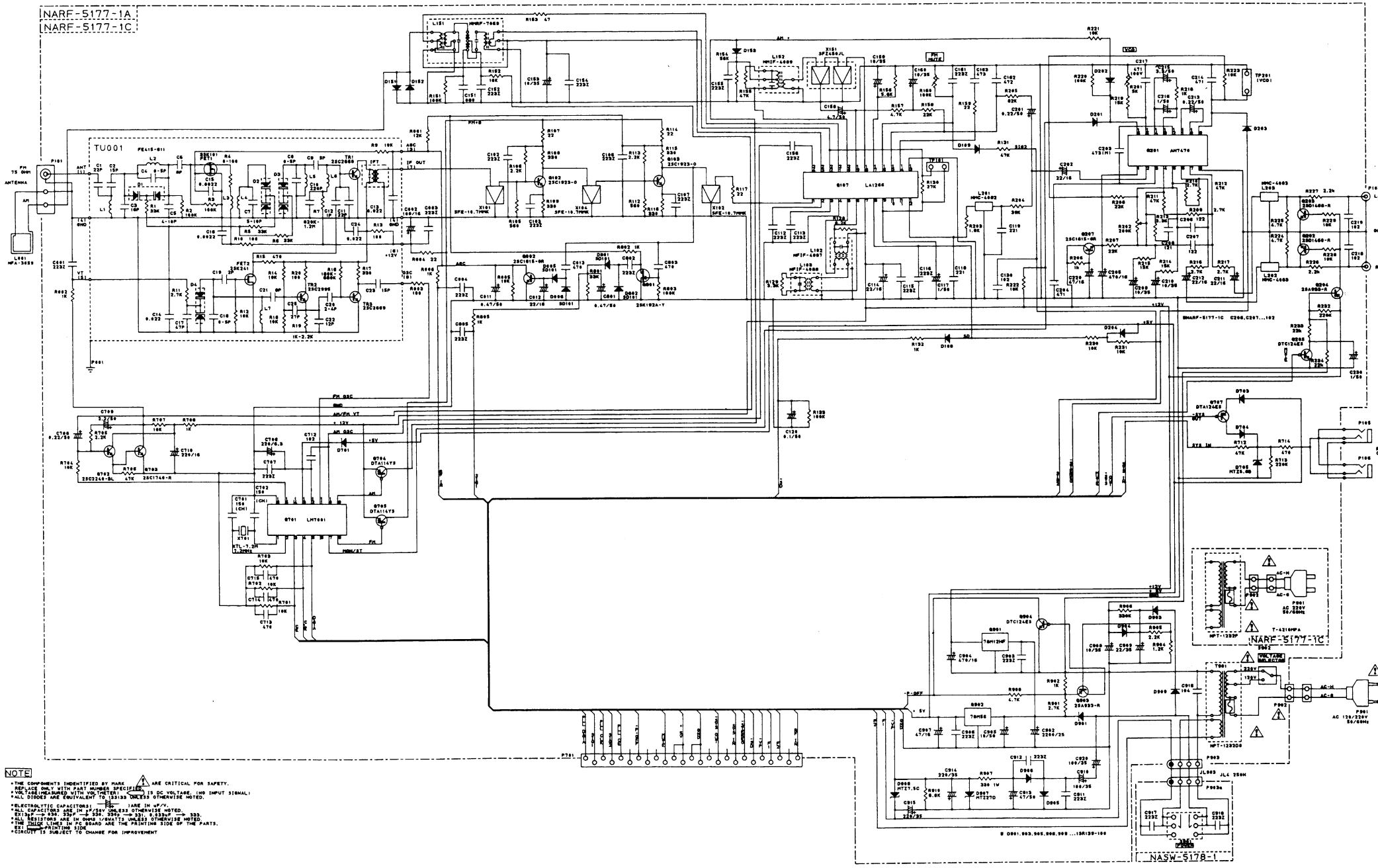


LA1266 (FM IF/AM radio system)

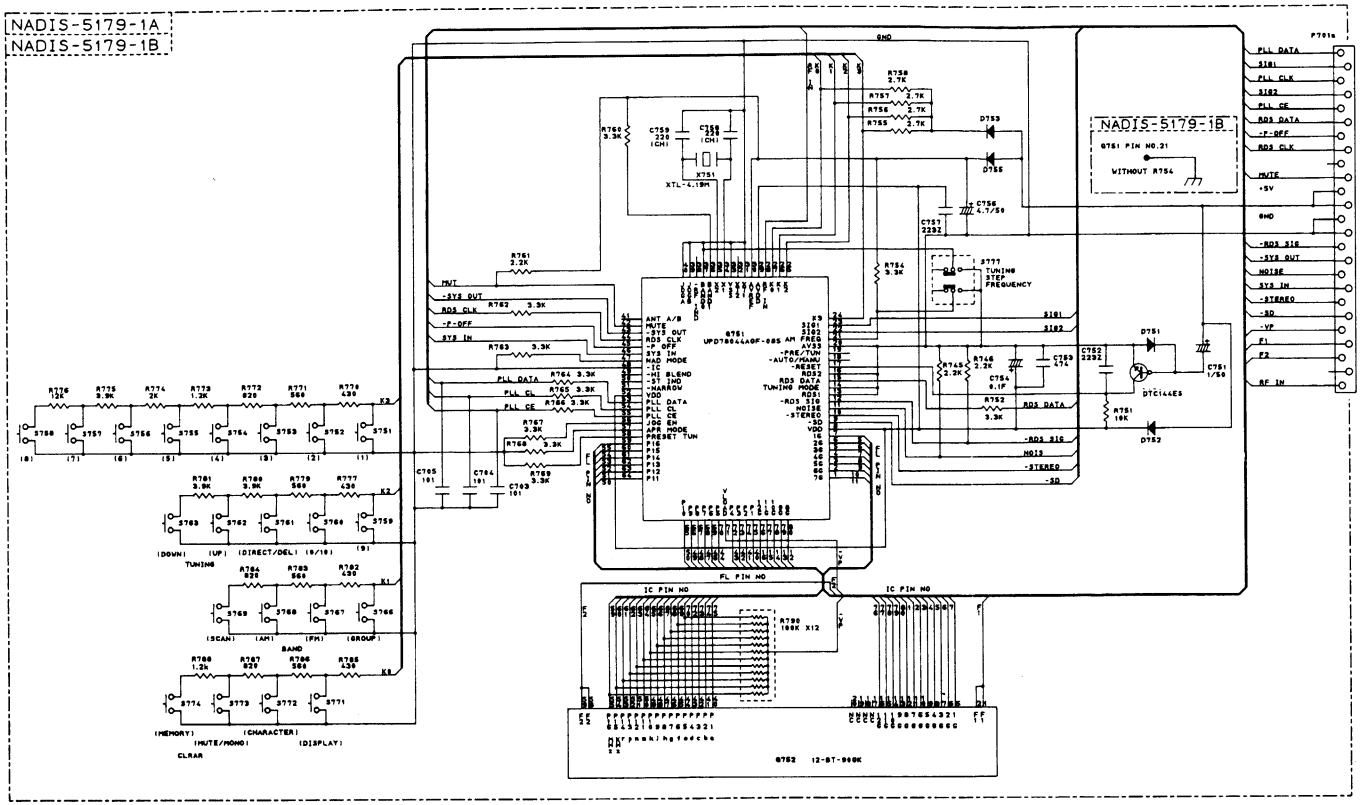


SCHEMATIC DIAGRAM

—other models—

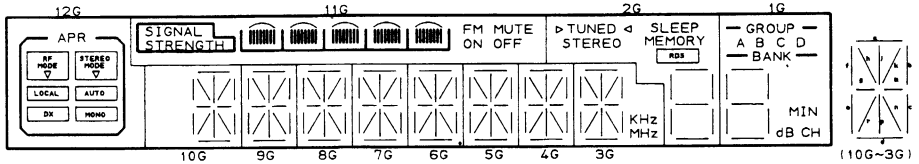


SCHEMATIC DIAGRAM



NOTE

- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE MEASURED WITH VOLTMETER ( ) IS DC VOLTAGE. (NO INPUT SIGNAL)
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS: ( ) ARE IN μF/V UNLESS OTHERWISE NOTED.
- ALL CAPACITORS ARE IN μF/50V UNLESS OTHERWISE NOTED. 8X10μF → 836, 33μF → 389, 330μF → 251, 0.033μF → 333.
- ALL RESISTORS ARE IN OHMS 1/4WATTS UNLESS OTHERWISE NOTED.
- THE CHIP PARTS IN P.C.BOARD ARE THE PRINTING SIDE OF THE PARTS.
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT



		E	C	B
FM	Q002	0.00	4.68	0.00
AM		0.00	0.00	0.00
FM	Q102	1.34	9.12	2.09
AM		0.00	0.00	0.00
FM	Q103	1.42	8.88	2.07
AM		0.00	0.00	0.00
FM	Q202	0.00	0.00	0.68
AM		0.00	0.00	0.00
FM	Q203	0.00	0.00	0.67
AM		0.00	0.00	0.00
FM	Q204	11.92	11.90	11.22
AM		11.92	0.00	14.90

		E	C	B
	Q205	0.00	0.00	4.93
		0.00	14.87	0.00
	Q207	11.15	11.92	11.87
		11.15	11.92	11.87
	Q702	0.60	11.15	1.09
		0.60	11.35	1.09
	Q703	0.00	3.80	0.60
		0.00	5.80	0.60
	Q704	11.90	0.00	11.84
		11.90	11.90	0.00
	Q705	11.90	10.61	0.00
		11.90	0.00	11.85

		E/D	C/S	B/G
	Q706	5.68	5.59	4.96
		5.68	1.95	5.68
	Q707	5.30	0.00	4.94
		5.31	0.00	4.95
	Q802	2.57	11.91	3.18
		2.54	11.92	3.14
	Q903	5.25	0.00	6.52
		5.75	0.00	7.03
	Q904	0.00	4.48	0.00
		0.00	4.48	0.00
	Q801	5.16	0.00	0.00
		0.00	0.00	0.00

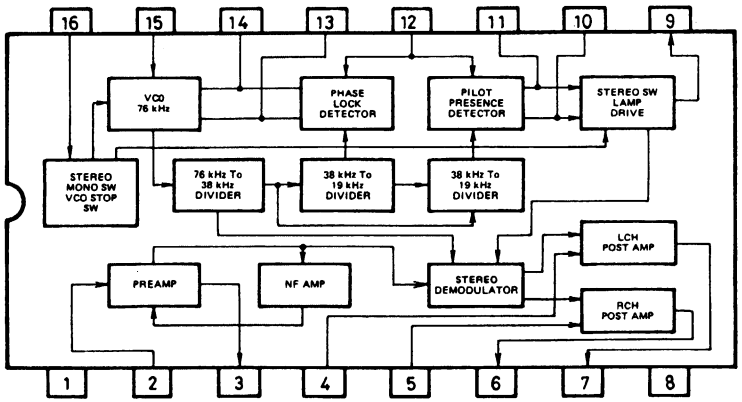
		1	2	3	4	5	6	7	8	9	10	11	12
FM	Q107	2.53	2.53	2.53	0.00	11.91	11.91	11.91	4.80	4.11	2.46	2.80	3.16
AM		1.05	1.05	1.05	0.00	11.92	11.92	11.92	4.79	3.86	2.50	2.30	3.15
FM	Q201	11.16	2.56	6.04	8.98	8.98	3.97	4.00	0.00	9.88	2.57	2.58	2.57
AM		11.16	2.56	6.05	8.99	8.99	3.97	4.00	0.00	11.15	2.58	2.58	2.58
FM	Q701	0.71	1.67	0.00	0.00	0.00	0.00	7.96	0.00	11.83	0.00	2.90	4.92
AM		0.71	1.67	0.00	0.00	0.00	0.00	9.20	11.85	0.00	1.81	0.00	4.94
		13	14	15	16	17	18	19	20	21	22	23	24
FM	Q107	0.00	1.54	1.56	0.49	0.00	2.53	1.56	0.00	4.00	4.00	4.00	3.20
AM		0.00	1.51	1.65	0.00	0.38	1.06	1.63	11.33	3.69	3.69	3.69	2.41
FM	Q201	2.57	2.58	0.40	0.74								
AM		2.58	2.57	0.00	8.65								
FM	Q701	4.92	1.05	1.09	0.00								
AM		4.94	1.05	1.08	0.00								

	Q753			Q901		Q902	
E	0.00	0.00	1	20.20	22.00	20.20	22.00
C	4.93	4.93	2	0.00	0.00	0.00	0.00
B	0.00	0.00	3	11.92	11.92	5.68	5.68
	FM	AM		FM	AM	FM	AM

FM	-VP	-28.40
AM		-28.90

FM	F1,F2	4.7	AC
AM		4.7	AC

AN7470 (FM stereo decoder)



PRINTED CIRCUIT BOARD-PARTS LIST

MAIN CIRCUIT PC BOARD (NARF-5177-1/1A/1C)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end	
TU001	240088	FE337-A07 <D>
TU001	240089	FE415-G11 <W/P>
	ICs	
Q107	22240039	LA1266
Q201	22240242	AN7470
Q701	22240090	LM7001
Q901	222780125NEC	78M12HF
Q902	222780565JRC	78M56
	Transistors	
Q002,Q207	2211255 or	2SC1815-GR or
	2214915	2PC1815-GR
Q102	2211723	2SC1923-O
Q103	2211723	2SC1923-O <W/P>
Q202,Q203	2212794	2SD1468-R
Q204	2213074	2SA933-R
Q205	2213160	DTC124ES
Q702	2211406	2SC2240-BL
Q703	2211183	2SC1740-R
Q704,Q705	2213090	DTA114YS
Q707	2212600	DTA124ES
Q801	2212274	2SK192A-Y
Q903	2213074	2SA933-R
Q904	2213160	DTC124ES
	Diodes	
D005,D006	223191	SD101
D108,D109	223163 or	1SS133 or
D151-D153	223205	1SS270A
D201-D204	223163 or	1SS133 or
D701-D704	223205	1SS270A
D705	224450562	MTZ5.6B
D801,D802	223191	SD101
D901,D903	22380032	1SR139-100
D904	223163 or	1SS133 or
	223205	1SS270A
D905,D906	22380032	1SR139-100
D907	224452704	MTZ27D
D908	224450753	MTZ7.5C
D909	22380032	1SR139-100
	Coils & Transformers	
L102	233469Y	NFIF-4087
L103	233470Y	NFIF-4088
L151	231226Y	NMRF-7069
L152	232166Y	NMIF-4089
L201	232164Y	NMC-4082 <W/P>
L202,L203	232165Y	NMC-4083
⚠ T901	2301075Y	NPT-1232D, Power transformer <D>
⚠ T901	2301077Y	NPT-1232DG, Power transformer <W>
⚠ T901	2301076Y	NPT-1232P, Power transformer <P>

CIRCUIT NO.	PART NO.	DESCRIPTION
	Ceramic filters	
X101,X102	3010071	SFE-10.7MA5 <D>
X101,X102	3010137	SFE-10.7MMK <W/P>
X104	3010137	SFE-10.7MMK <W/P>
X151	3010123	SFZ450JL
	X'tal	
X701	3010158 or	XTL-7.2M
	3010141	
	Capacitors	
C002	354741019	100 μ F,16V,Elect.
C011	354784799	0.47 μ F,50V,Elect.
C012,C114	354742209	22 μ F,16V,Elect.
C117	354780109	1 μ F,50V,Elect.
C120	354781099	0.1 μ F,50V,Elect.
C153	354761009	10 μ F,35V,Elect.
C158	354780479	4.7 μ F,50V,Elect.
C159,C160	354761009	10 μ F,35V,Elect.
C162	374724724	4700pF±5%,50V,Plastic
C163	374724734	0.047 μ F±5%,50V,Plastic
C201,C213	354782299	0.22 μ F,50V,Elect.
C202	354742209	22 μ F,16V,Elect.
C203	374724734	0.047 μ F±5%,50V,Plastic
C205	354744719	470 μ F,16V,Elect.
C206,C207	374721024	1000pF±5%,50V,Plastic
C206,C207	374721224	1200pF±5%,50V,Plastic
C206,C207	374721524	1500pF±5%,50V,Plastic
C209,C210	354761009	10 μ F,35V,Elect.
C211,C212	354742209	22 μ F,16V,Elect.
C215	354780339	3.3 μ F,50V,Elect.
C216,C230	354780109	1 μ F,50V,Elect.
C217	370134714	470pF±5%,100V,Plastic
C220	354744709	47 μ F,16V,Elect.
C706	354722219	220 μ F,6.3V,Elect.
C708	354782299	0.22 μ F,50V,Elect.
C709	354780229	2.2 μ F,50V,Elect.
C710	354742219	220 μ F,16V,Elect.
C801	354784799	0.47 μ F,50V,Elect.
C902	354752229	2200 μ F,25V,Elect.
C904	354744719	470 μ F,16V,Elect.
C905	354781009	10 μ F,50V,Elect.
C907	354744709	47 μ F,16V,Elect.
C908	354761009	10 μ F,35V,Elect.
C909	354762209	22 μ F,35V,Elect.
C910,C920	354761019	100 μ F,35V,Elect.
C913	354784709	47 μ F,50V,Elect.
C914,C915	354762219	220 μ F,35V,Elect.
C916	374721044	0.1 μ F±5%,50V,Plastic

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistors	
R160	5210266	N06HR 100KBC, Semi-fixed
R201	5210261	N06HR 5KBC, Semi-fixed
R202	5210267	N06HR 200KBC, Semi-fixed <P/W>
R907	443623314	330ohm ±5%, 1W, Metal oxide film
R921	431523355	RC1/2GFK 3.3M ohm, Solid
	Terminals	
P101	25060214	NTM-4PDML136 <D>
P101	25060117	NTM-2PDML051 <W/P>
P103	25045333	NPJ-2PDBL185
P105,P106	25045439Y	NPJ-1PDBL263
P701	25050965	NSCT-25P752
P903	25051108	NSCT-4P895
	Plugs	
⚠ P902	25055675	NPLG-2P-631
TP101,TP201	25055038	NPLG-2P29
	Switch	
⚠ S902	25030378	Rotary <W>

POWER SWITCH PC BOARD (NASW-5178-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switch	
⚠ S901	25035663Y	NPS-122-L615, Power switch
	Holder	
P903a	25051108	NSCT-4P895, Wire traps

DISPLAY CIRCUIT PC BOARD (NADIS-5179-1/1A/1B)

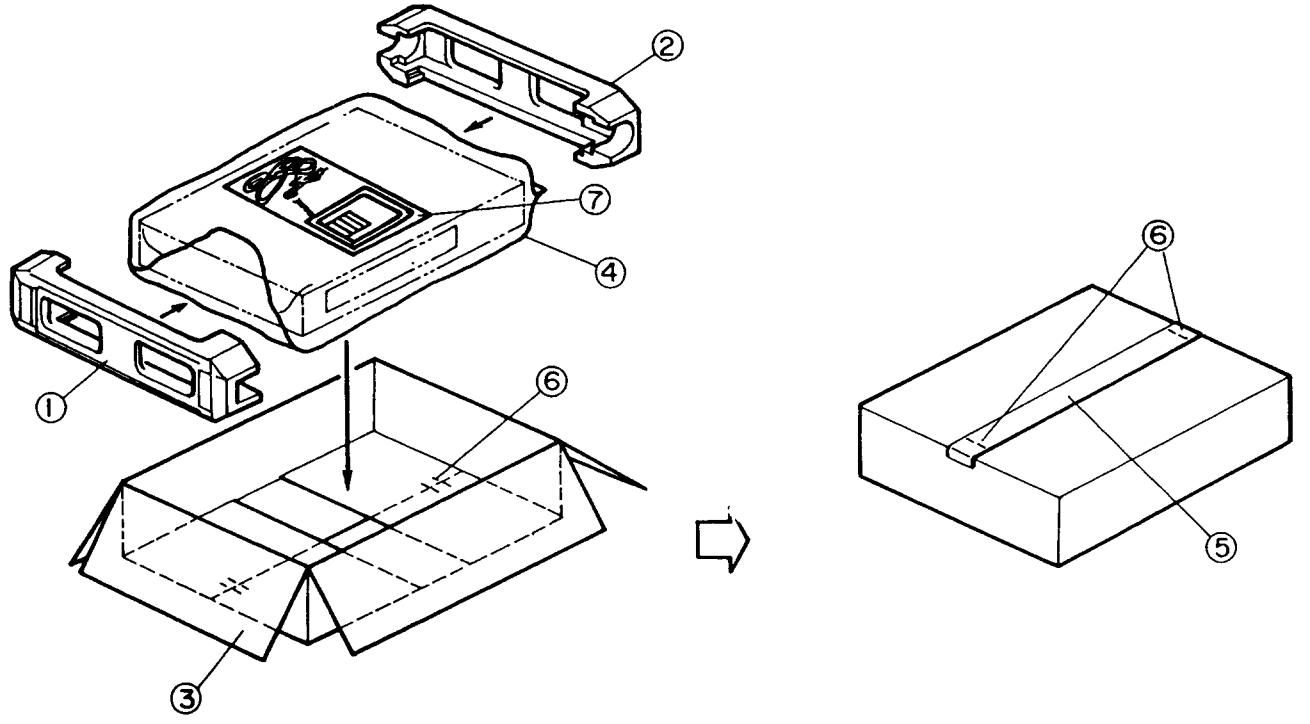
CIRCUIT NO.	PART NO.	DESCRIPTION
	IC	
Q751	22240842	μPD78044AGF-085
	FL tube	
Q752	212140A or 212140	12-BT-90GK, FL TUBE
	Transistor	
Q753	221282	DTC144ES
	Diodes	
D751-D753	223163 or 223205	1SS133 or 1SS270A
D755	223163 or 223205	1SS133 or 1SS270A
	X'tal	
X751	3010224	XTL-4.19M
	Capacitors	
C751	354780109	1μF,50V,Elect.
C753	375524744	0.47μF±5%, 50V, Plastic
C754	3000076	0.1F, 5.5V, Super
C756	354780479	4.7μF,50V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Resistor	
R790	49163104412	100K ohm x12, 1/10W, Network resistor
	Switches	
S751-S763	25035664Y	NPS-111-S616, Push switches
S766-S769	25035664Y	NPS-111-S616, Push switches
S771-S774	25035664Y	NPS-111-S616, Push switches
S777	25065497	NSS-22170P, Slide switch <W>
	Wire holder	
P701a	25050889	NSCT-25P684
	Holder	
	27190953Y	FL tube

NOTE: <D>:120V model only
<P>:230V model only
<W>:Worldwide model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

PACKING VIEW



REF.NO.	PART NO.	DESCRIPTION
1	29091647Y	Pad (L)
2	29091648AY	Pad (R)
3	29052837Y	Carton box
3-a	29361783Y	Label (UPC) <N>
4	29100037-1Y	650×500mm, Styren bag
5	29110071	PP tape
6	282301	Staple
7	<Accessary bag ass'y>	
	29342076Y	Instruction manual E
	29342087Y	Instruction manual U3 <C/T/WT>
	29342111Y	Instruction manual T <WT>
	232140	NMA-3057,AM loop antenna
	292111	FM antenna <D/C>
	292112	FM antenna <WT/T/A/K>
	2010244Y	Connection cord
	2010200	Remote control cord
	29365019B	Waranty card <D/N>
	29358002K	SS LIST <D/N>
	25065462	YAE21-0237, Two FM adaptor <WT/T/A/K>
	25055018	CV-K-1, Conversionplug <W/T>
	29100097-1Y	350×250mm, Styren bag

NOTE: <D>:120V model only
<N>:U.S.A. model only
<C>:Canadian model only
<WT>:Wolrdwide model only
<T>:Taiwanese model only
<A>:Australian model only
<K>:Korean model only